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Docket No.: 60154.30200

IN THE CLAIMS

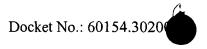
What is claimed is:

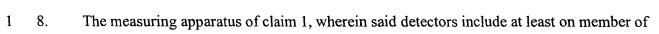
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4.	A measuring appar	atus, comprising

- a light source for producing light beams for at least two optical channels; and
- 3 said optical channels each including:
- an interferometer for receiving one said light beam and providing therefrom a reference
- 5 beam and a measurement beam;
- a reflective target for receiving and redirecting said measurement beam;
- a beam splitter for receiving the redirected said measurement beam and providing therefrom a first portion and a second portion;
- 9 a detector for sensing said first portion and producing a detector signal based thereon;
 - said interferometer further for receiving said second portion of said measurement beam and combining said second portion with said reference beam to form a result beam; and
 - a receiver for sensing said result beam and producing a receiver signal based thereon.
- 1 2. The measuring apparatus of claim 1, wherein said light source includes a laser diode.
- 1 3. The measuring apparatus of claim 1, wherein said light source includes a single light
- 2 producing unit, a splitter and a bender for producing said light beams.
- 1 4. The measuring apparatus of claim 1, wherein said light source includes a plurality of light
- 2 producing units, one per each said optical channel.
- 1 5. The measuring apparatus of claim 1, wherein said interferometers and said beam splitters
- 2 employ polarization.
- 1 6. The measuring apparatus of claim 1, wherein said reflective targets are retroreflectors.
 - 7. The measuring apparatus of claim 1, wherein said detectors are position sensitive
- 2 detectors.

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- the set consisting of bi-cell photo diode units, quad-cell photo diode units, and photo diode
- 3 arrays.

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- 1 9. The measuring apparatus of claim 1, wherein said receivers include photo diodes.
- 1 10. The measuring apparatus of claim 1, further comprising:
- 2 a processing system for processing said detector signals and said receiver signals into
- 3 position data suitable for communication to an external system.
- 1 11. The measuring apparatus of claim 10, wherein:
- 2 said light source includes a modulator to produce said light beams including a modulation
- 3 characteristic; and
- 4 said processing system includes a demodulator and processes at least one of said detector
- 5 signals and said receiver signals with phase sensitive detection.
- 1 12. A measuring apparatus, comprising:
- 2 means for producing light beams for at least two optical channels; and
- 3 said optical channels each including:
- 4 interferometer means for receiving one said light beam and providing therefrom a
- 5 reference beam and a measurement beam;
- 6 means for receiving and redirecting said measurement beam;
- 7 splitter means for receiving the redirected said measurement beam and providing
- 8 therefrom a first portion and a second portion;
- 9 detector means for sensing said first portion and producing a detector signal based
- thereon;
- said interferometer means further for receiving said second portion of said measurement
- beam and combining said second portion with said reference beam to form a result
- beam; and

Docket No.: 60154.30200

14	receiver means for sensing said result beam and producing a receiver signal based
15	thereon.
1	13. The measuring apparatus of claim 12, wherein:
2	said means for producing light beams includes:
3	means for producing an initial beam;
4	means for splitting said initial beam into a first beam and at least one secondary beam;
5	and
6	bender means for directing said secondary beams in parallel with said first beam, thereby
7	producing said light beams for said at least two optical channels.
1	14. The measuring apparatus of claim 12, wherein:
2	said interferometers include means for polarizing said measurement beams; and
3	said splitter means includes means for separating with polarization, thereby permitting
4	providing said first portions and said second portions of said measurement beams based
5	on respective polarization characteristics.
1	15. The measuring apparatus of claim 12, further comprising:
2	processing means for processing said detector signals and said receiver signals into position
3	data suitable for communication to an external system.
1	16. The measuring apparatus of claim 10, wherein:
2	said means for producing light beams includes modulating to produce said light beams
3	including a modulation characteristic; and
4	said processing means includes demodulating means to permit processing at least one of said
5	detector signals and said receiver signals with phase sensitive detection.
1	17. A method for measuring positional information about a target, the method comprising the

- 2 steps of:
- 3 (a) producing light beams for at least two optical channels; and
- 4 in each said optical channel:

Docket No.: 60154.3020

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detection.

3	(b) receiving a said light beam and providing therefrom a reference beam and a
6	measurement beam;
7	(c) receiving at and redirecting said measurement beam from the target;
8	(d) receiving the redirected said measurement beam and providing therefrom a first
9	portion and a second portion;
10	(e) producing a detector signal based on said first portion;
11	(f) combining said second portion with said reference beam to form a result beam;
12	(g) producing a receiver signal based on said result beam; and
13	(h) processing said detector signals and said receiver signals into position data suitable
14	for communication to an external system.
1	18. The method of claim 17, wherein:
2	said step (b) includes polarizing said measurement beams; and
3	said step (d) includes separating said first portions from said second portions based on
4	polarization.
1	19. The method of claim 18, wherein:
2	said step (a) includes modulating with a frequency said light beams; and
3	said step (h) includes demodulating at least one of said detector signals and said receiver
4	signals based on said frequency.

The method of claim 19, wherein said step (h) includes processing with phase sensitive